IN THE CLAIMS

1. (Currently Amended) A method of removing a photoresist layer comprising:

positioning a substrate comprising a photoresist layer into a processing chamber;

removing the photoresist layer using a plasma; ~~and~~

monitoring the plasma for both a hydrogen optical emission and an oxygen optical emission during the process; and

stopping the etching upon either the hydrogen optical emission obtaining a first level or the oxygen optical emission obtaining a second level, or both.

2. (Original) The method of claim 1 wherein the photoresist layer comprises a hardened crust layer.

3. (Original) The method of claim 1 wherein the photoresist layer is implanted with an implant species.

4. (Original) The method of claim 1 wherein the photoresist layer has been exposed to ions.

5. (Original) The method of claim 1 wherein the photoresist layer has been exposed to an electron beam.

6. (Original) The method of claim 2 wherein the monitoring step produces a signal having a first level while etching the crust and produces a signal having a second level after the crust has been removed.

7. (Original) The method of claim 1 wherein the hydrogen optical emission occurs at a wavelength of about 656 nm.

8. (Cancelled)

9. (Currently Amended) The method of claim 1 [[8]] wherein the oxygen optical emission occurs at a wavelength of about 777 nm.

10. (Original) The method of claim 1 further comprising:

stopping the etching upon the hydrogen optical emission obtaining a predetermined level.

11-12. (Cancelled)

13. (Currently Amended) The method of claim 2 [[12]] wherein the oxygen optical emission monitoring step produces an oxygen optical emission signal having a first level while etching the crust and a second level after the crust is removed.

14. (Original) The method of claim 13 wherein the oxygen optical emission signal has a third level after the photoresist is removed.

15. (Currently Amended) The method of claim 1 [[8]] wherein the hydrogen optical emission is correlated with the oxygen optical emission.

16. (Original) A method of etching a photoresist layer comprising:

providing a substrate comprising a photoresist layer to a process chamber;

etching the photoresist layer using a plasma; and

monitoring the plasma for both a hydrogen optical emission and an oxygen optical emission while etching.

17. (Original) The method of claim 16 wherein the photoresist layer comprises a crust.

18. (Original) The method of claim 16 wherein the photoresist layer is implanted with an implant species.

19. (Original) The method of claim 16, wherein the photoresist layer is implanted with at least one of As, B, BF_2, BF_4, P, In, Sb or H.

20. (Original) The method of claim 16 wherein the photoresist layer has been exposed to an ion beam.

21. (Original) The method of claim 16 wherein the hydrogen optical emission occurs at a wavelength of about 656 nm.

22. (Original) The method of claim 16 wherein the oxygen optical emission occurs at a wavelength of about 777 nm.

23. (Cancelled)

24. (Currently Amended) The method of claim 17 [[16]] wherein the oxygen optical emission monitoring step produces an oxygen optical emission signal having a first level while etching the crust and a second level after the crust is removed, and wherein the hydrogen optical emission monitoring step produces a hydrogen optical emission signal having a third level while etching the crust and a fourth level after the crust is removed.

25. (Currently Amended) The method of claim 24 [[16]] wherein the oxygen optical emission signal has a fifth level after the photoresist is removed.

26. (Original) The method of claim 16 wherein the hydrogen optical emission is correlated with the oxygen optical emission.

27. (New) The method of claim 1, further comprising:

determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.

28. (New) The method of claim 27, further comprising:
comparing the monitored optical emissions to a fingerprint of a clean chamber.

29. (New) The method of claim 16, further comprising:
determining from at least one of the monitored optical emissions whether a cleaning cycle is necessary, whether components within the chamber are degrading, or both.

30. (New) The method of claim 29, further comprising:
comparing the monitored optical emissions to a fingerprint of a clean chamber.